

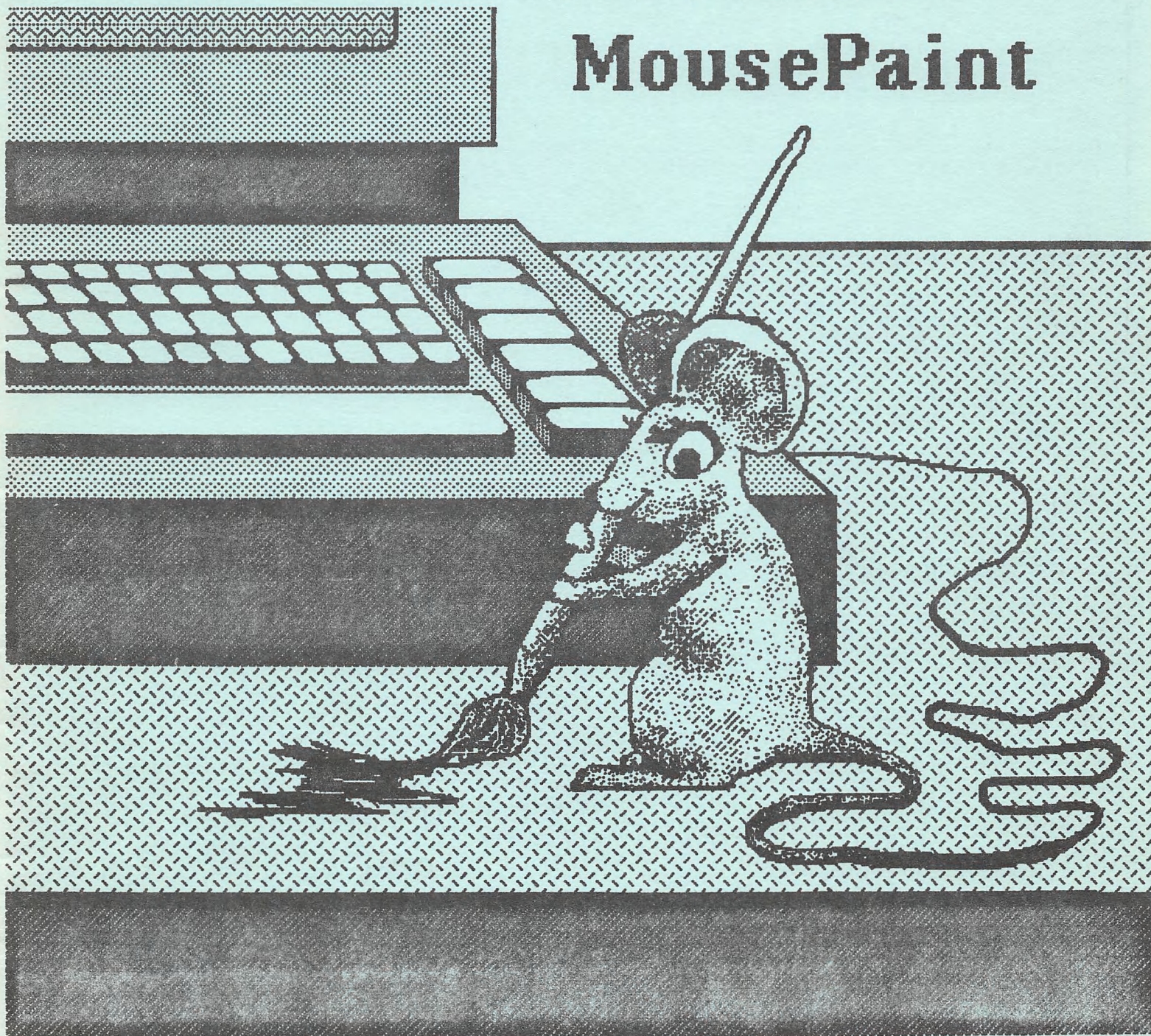
SCARLETT

A PUBLICATION OF THE BIG RED APPLE CLUB

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MousePaint



THE BIG RED APPLE CLUB

MASTHEAD

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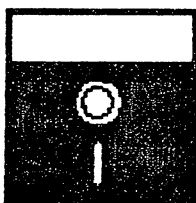
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To save on postage, programs can be copied onto both sides of your diskettes. To be able to use the back side of a disk you just use a paper punch to make a notch on the disk directly opposite the existing notch.

There is a \$1.00 charge for all copies made from the software library. This fee will help cover the costs of maintaining and upgrading the library. Postage will be paid by B.R.A.C. for addresses within the United States.

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FROM THE EDITORS DISK

by John Wrenholt

We've moved! Our old location was just too small, so we've moved into a slightly larger office. Our new address is:

**Big Red Apple Club
1105 South 13th Street, #103
Norfolk, NE 68701**

We also have a new telephone number. It is **402-379-4680**. You will be able to reach us at our old address and old telephone number for some time in the future, but please change your records to reflect our new location.

Leading off this month's issue of Scarlett, we have a review of the Mouse // and MousePaint by Jeff Billman. BRAC member, Michael Hamoaka, submits his review of "Bouncing Kamungas".

Our regular columnists round out this issue with Pest Control by David Burroughs, Department of Secondary Education by Julianna Stogner, the software engineering column by Christine Elia, Bracing by Warren Duff, the Ham Radio Sig by Veon Dillon, and Tips and Hints by Cathy Reed.

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PEST CONTROL

by David Burroughs

The response so far has been great. I must first apologize to those I have to cut short or can't get to in the column. I have also received several letters from people who desired direct answers and not to be published. I sincerely wish I had the time and knowledge to address each question directly but, alas, I am a poor working person with limited time to spare and devote that to doing my best to produce something of value and interest to as many of the readers as possible. I must select those questions I feel are the most interesting to the most people and suggest a answer and/or request inputs from other readers. The main point of this column is to encourage the sharing of problems and their answers.

Please save the Scarlett staff a lot of time by addressing questions or amazing discoveries (those will be welcomed also) to me directly: David H. Burroughs, PSC 2 Box 15361, APO San Francisco, 96367.

READER: Bettye L. Middleton, Burleson, Texas writes that she has a program that is designed to balance a checking account. The file contains three intermingled checking accounts. Her problem occurs when the prgram compares the Adjusted Balance with the Bank Statement Balance. Even though they are the same, it says the Adjusted Balance is greater by 1.90734863E-06

ANSWER: Bettye, you have been plagued by a rare but not unheard of disease caught only by users of a floating point interpreter such as Applesoft. Just remember that even though you enter dollars and cents, the Apple is calculating in precision floating point and then rounding off when printing out. Also bear in mind that the difference you had was just under 2 millionths of a dollar. We can just throw that away without worry and that is just what I

propose. You can really round everything off to the nearest penny by taking your results before the compare, multiplying by 100, taking the integer of that (round off here), then dividing by 100 to get back to normal. Example: HBAL = (INT(HBAL*100))/100.

READER: Chuck Hasenauer of Baltimore has the following system. Apple][+, Grappler +, Micromodem][e, Viewmaster 80, and Applicard with 64K. His problem is that the modem, 80 column, and Z80 cards don't like each others company. After he recently added the modem, he found that nothing would boot. He found that any two cards would work fine and the problem only occurred when all three cards are in at the same time.

ANSWER: Help readers! Anyone out there know how to get Chuck going? I have no experience with this particular combination. I do know some brands of Z80 cards are very timing critical, which in turn is voltage dependent (+5vdc). Also some power supplies tend to creep high when loaded with a full deck of cards. Use a good digital meter and check your +5vdc while were waiting to see if there is any help out there. Most Z80 cards are happy at 4.80 to 4.90 vdc.

READER: Bob Hall of Nantucket, MA writes that he would like to store some strings in memory while he runs a variety of programs. Presently he has to load 2 long files every time he changes programs which all use the same data/strings. To speed things up he would like to load the variables just once.

ANSWER: This seems to be a good subject for at least a mini article. How about it you data file programmers out there!

READER: D.A. Burkhartsmeier of Orangevale, CA writes in as he is trying

to get a system set up and going. He says that getting information from suppliers has been most disappointing and frustrating. He recently ordered a Z80 card and an 80 column card. He stated not to process the order if installation manuals and warranties were not included. Both came without either. The cards were not marked so he doesn't even know which is which.

There were also a number of specific questions.

ANSWER: I'll try to answer as many of your questions as I can without listing them in the interest of saving space. As far as I can find from research your Fourth Dimension drives are standard and should work fine with an Apple or third party diagnostic or standard controller card. There is no difference in drive one and two. They are identical. The one connected to the drive one connector on the controller card becomes the "boot" drive and start up the booting process at turn on. I recommend getting a DOS 3.3 system master disk and DOS manual from Apple.

The new Prodos from Apple looks great for serious users and should be compatible with your system, however it is not fully compatible with all DOS 3.3 disks and probably won't be necessary for the average user to run out and buy. Most disk drives are capable of "half-tracks". Actually Apple's Disk II has 70 tracks but due to the head width it is not practical to use all tracks. To keep tracks far enough apart, it uses every other track, thus 35 tracks. Some copy protected software feeds the disk drive an extra pulse and gets the drive to using the tracks in between the normally used tracks. This is what we call half-tracking.

As for your cards. The one with the 4 pin connector on the end of card is the 80 column card and is probably very similar to a Videx card. The top two pins are for the 80 column video to your monitor. The topmost pin is probably ground. Make sure by checking for

continuity with a meter to the ground input to the card at the slot connector. Looking at the back of the card it will be the pin farthest away from the video connector. The next one down should be the video signal. You will need to physically switch cables on the monitor when you go to 80 columns unless you buy or build a hard or soft switch cable harness. See figure 1 for information on constructing a simple switch harness.

One word of caution. You must have a high resolution monitor to use the 80 column card. Most inexpensive color monitors just won't work. Make sure it specifies 80 columns or at least 15MHZ response. A green or amber monochrome is recommended for comfortable 80 column work. The Z80 card is only used to run CP/M software and all other programs will ignore it. As far as I know, RAM cards and Language cards operate the same way. There are some physical differences, however I have never found anything that my Microsoft 16K RAM card doesn't handle. When you put it all together put the RAM card in slot 0 (leftmost viewed from the keyboard), printer next in slot 1, 80 column card in slot 3, Z80 in 4, Disk controller in 6. Slot 2 is for modem, 5 is for disk drives 3 and 4, and 7 is special and normally not used. This is the accepted standard layout and a lot of programs, especially CP/M expect it.

I can't really recommend a specific printer. I highly recommend you either buy a name brand or one that you have seen in use and know that it is what you want.

Look specifically at print quality, speed, and noise in that order. One that is a little noisy in the store may be a thrashing machine in the quiet of your home. Be sure to check out the graphics capability if that is your bag.

I hope I have been some help and maybe some other Scarlett reader in your area will look you up in the phonebook and offer assistance even further. Hint, hint. Good luck. Dave.

To Construct 40/80 column select switch cable you need:

- a 3 to 4 ft. video cable with RCA plugs on each end and cut in half
- a Header plug that mates with your card connector
- a Double Pole Double Throw (DPDT) switch. It may be slide, toggle, or rocker

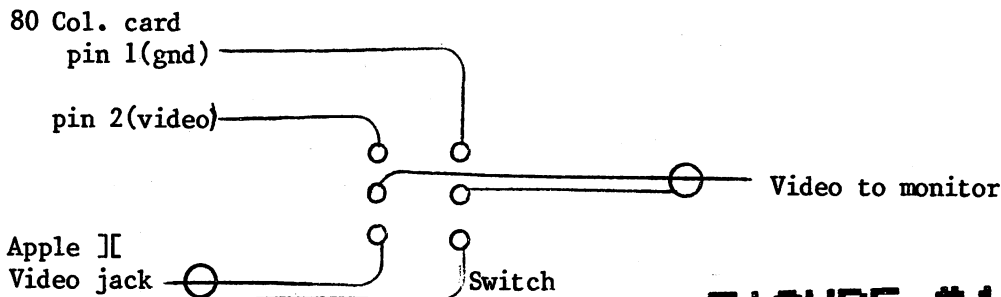


FIGURE #1

Wiring of 40/80 column select switch

LIBRARY NEWS
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so unless you know something about Forth, I won't suggest ordering them.

C13 has three different educational simulations in which the object is to wisely manage your resources to you may achieve your objective. The simulations are called Moon Walk, Road Trip and Powerstat.

U09 and U10 contain a system of over forty programs which will allow you to plot graphs.

Q01 through Q09 are new CP/M disks. These require a Z-80 card to use. We are currently in the process of preparing written descriptions about the various programs on these disks. For now you will have to rely on these Directory listings to decide if the programs are worthwhile.

DISK VOLUME Q01

MODEMCOM
MODEMASM
MODEMASM.1
MODEMASM.2
MODEMDOC
DU-V75COM
RESOURCEDOC
DU-V75DOC
RESOURCEDOC.1
RESOURCEDOC.2
RESOURCECOM
DU/MAP2DOC
IACDISKDOC

DISK VOLUME Q02

SALVOBAS
ORBITBAS
MUGWUMPBAS
LIFE2BAS
TOWERSBAS
TARGETBAS
STARTREKBAS
STARTREKBAS.1
TREKINSTBAS
RUSROUBAS
MASTRMNDBAS

DISK VOLUME Q03

/DOC
/COM
RCPM-26LQT
UNERACOM
APMOVEASM
APMOVECOM
STATUSCOM
CAL-13COM
CAL-13DOC
MX80PLOTBAS
RESOURCECOM
TPACOM
XDIRCOM
RESOURCEDQC
RESOURCEDQC.1
ERASECOM
RENAMECOM
INSTRUCT004

DISK VOLUME Q04

SD-43COM
XMODEMCOM
MISAMENUMQN
CPM-NETMQN
ALLENWNMQN
CPM-NETMQN.1
HYDEPARKMQN
COMPUSERMQN
PALATINEMQN
MODEMCOM
READ1ST
MODEM72COM

DISK VOLUME Q05

APRILPQM
APXMODEMCOM
SDCOM
MODEM72AQM
MODEM72AQM.1
MODEM72AQM.2
MODEM7LQB
DIR3COM
FILESCOM
CRCKCOM
CRC-ARTDQC
APMODEM7DQC
APXMDMAQM
APXMDMAQM.1
READ1ST
PIPVTEXT

DISK VOLUME Q06

-CPM/DOM001
THOUGHT
QUICKIESQ0
FIND4DDTAQM
FLSCOM
SQCOM
USQCOM
HELPCOM
RCPMLISTQ08
TYPESQDOC
TYPESQCOM
DU-V75COM
SQ/USQHQ
SQ/USQDQC
DU-V75AQM
HELPHLP
ZSIDFIXFIX
HIMEMASM
DU-V75AQM.1

DISK VOLUME Q07

40\$INPAT
40\$OUTPAT
APPLHALTASM
CATALOGDOC
CLEANCOM
-CPM/DOM000
CLEANDOC
APHAYESASM
MASTBAK
APBOOT2ASM
APMODEMCOM
APXMODEMCOM
NOLFPAT
STDKEYBDPAT
APMODEMDOC
THOUGHT
MLIST50COM
MASTCAT
CATCOM
FMAPCOM
INDEXASM
UCATCOM
INDEXASM.1
INDEXASM.2
INDEXASM.3
INDEXDOC
APXMODEMDOC
INDEXCOM

DISK VOLUME Q08

PIPPATCHAQM
RCPMDISKDQC
PROTECTAQM
RENAMEAQM
RENAMEAQM.1
DUUAQM
DUUAQM.1

REVIEW: BOUNCING KAMUNGAS

by Michael Hamaoka

Another game from Penguin Software has "bounced" into the software market. Categorized as a children's arcade game, BOUNCING KAMUNGAS is definitely easier than most games. This, however, does not take away from the overall quality of the game. In fact, it adds something to it, especially for those people who aren't good at arcade games.

The setting for BOUNCING KAMUNGAS is the Dakotas where you are a melon farmer. The object is to grow melons to take to market. This, however, is not easily accomplished. First of all, the sky overhead has a permanent cloud cover. Lightning periodically strikes from the cloud and can hit you if your pitchfork, which is the only way to kill Kamungas, is up. Kamungas, which are the creation of a Dakotan freak, love to smash your melons. They will first appear alone but soon, after being told about the melon patch, many will appear to bounce on your melons. Another nuisance is the nearsighted weather snake, which is harmless unless scared. If you do scare it, the snake will release a pheromone which will make all of your harvested melons spoil while also causing the cloud to get lower and send out faster lightning bolts. The last problem is the

cactuses, which sometimes grow where a melon should be growing. It slows you down when you walk through it and the only way to destroy it is to let a Kamunga bounce on it.

After collecting nine ripe melons, the player must drive the melons to market in his truck. On the way, while driving at high speeds, he must avoid hitting a creature, called a Peronie, because melons will be jolted out of the truck. At the market, the player is given a bonus and the whole thing starts over at a harder level of play.

Movement is accomplished by using a joystick, paddles, or the keyboard. There is a game pause, a game reset, and a sound option which allows for quiet play or the use of a Mockingboard as well as sound through the Apple's speaker.

Over all, this game is well written and graphically appealing. I found it fun to play and much less frustrating than other arcade-style games. It does start out at a very easy level, but will challenge even the most experienced gamers at the higher levels. I recommend it as a game for the whole family.

Save On Computer Cartridge Ribbons!!!



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C. Itoh 1500,8023
8500, 8510;
NEC 8023
Order #197

\$5.50ea.; 1/2 dzn. \$33.00; 1 dzn. \$61.20

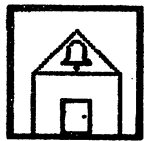


For: Epson MX 70/80;
IBM 5152 PC;
Commodore 4022;
Hewlett Packard
Order #192

\$5.00ea.; 1/2 dzn. \$30.00; 1 dzn. \$54.60

Illinois residents add 6.25% for tax.

Shipping & Handling ad: \$2.00 for each; \$2.50 for 1/2 dzn.; Free for 1 dzn. or more.
Order ribbons by each, 1 - 5; 1/2 dzn.; or multiples of 1/2 dozen. Ask for our same low prices for your printer. To order send return address + check or money order to:
Jodian Enterprises, Inc., 720 Nicholson St., Joliet, IL 60435



DEPARTMENT OF SECONDARY EDUCATION

by Julianna M. Stogner

Welcome to the second installment of DOSE (Department of Secondary Education). This month we have a program you may find useful in your computer classes. Those of you who have prepared programs for your classes are invited to submit the printouts to share with the rest of us. Perhaps together we can generate a collection of programs that will take care of many of our teaching chores.

One of the topics likely to be studied in a computer science class is computer memory locations. In our computer math class we explore the relationships between hexadecimal and decimal numbers prior to introducing the lessons on the computer memory. Then when we read about the Apple computer memory map, the desirability of using hexadecimal numbers rather than decimal numbers to refer to memory locations becomes readily apparent.

All the memory maps that we have studied from reference manuals and magazine articles are very generalized, and the actual percentages of memory occupied by DOS, BASIC languages, text, high-resolution graphics and the system monitor are difficult for the students to visualize adequately. To get a better grasp of the sizes of the memory allocations for each function and to reinforce the concept of hexadecimal numbers, I ask the students to prepare a more detailed memory map. The students list the Apple computer pages in hexadecimal and decimal numbers and give ranges of memory locations on each page in both kinds of numbers.

Before they have worked very long on their memory maps, the students realize that the assignment is a monumental task, and the tedium of completing the assignment is staggering. This assignment gives me the ideal opportunity

to illustrate the value of computers as tools. Imagine the students' chagrin when, after they have been working several evenings at writing decimal-hexadecimal conversions, I print out in a few minutes the same data they have been spending several hours to write down. (As programming expertise is developed, the production of the program by the students is also a good assignment.)

The program to produce the detailed listing of Apple memory pages and locations depends on the use of a routine to perform the conversions from decimal numbers to hexadecimal numbers. There are many examples of such routines available, all requiring the use of the computer's built-in ability to truncate numbers to integral values. The routine I chose to use was included in Bert Kersey's Beagle Bros. Tip Book Number Two. I was intrigued by the use of the integral variable in the conversion routine. This is an unusual approach in Applesoft BASIC. If you are not familiar with Kersey and the Beagle Bros. software company, you have missed one of the best educational tools available for Apple computer enthusiasts. Beagle Bros. has taken the admirable position of providing unprotected software, their programs are easily examined to study the programming techniques, and every package includes humorous presentations of Apple computer facts to accompany you in enjoying and using your computer.

You will notice that the listing includes lowercase text on lines 2 and 3. If you do not have the lowercase display and would like to view the printout on screen, simply change the lowercase to uppercase or use one of the routines that have been written to enable the user to convert from lowercase to uppercase. An example of such a conversion routine can

someone else who provides a light-hearted, informative approach with his programs.

Please let us know if you have suggestions for other uses of the ideas presented here. We are also on the lookout for additional suggestions for materials that have strong appeal to students.

Julianna M. Stogner
Daingerfield High School
Drawer V
Daingerfield, TX 75638

```

1 PRINT TAB( 25);"MEMORY MAP"
2 PRINT : PRINT TAB( 4);"Page";
  TAB( 15);"Memory Locations"

3 PRINT : PRINT "Dec"; TAB( 7)"H
  ex"; TAB( 17);"Dec"; TAB( 31
  );"Hex"

10 REM *****MEMORY MAP*****
15 REM -- LINES 20-110 ARE FR
  OM A HEX CONVERSION ROUTINE
  PRESENTED IN BEAGLE BROS. TI
  P BOOK #2

20 N = 16:S = N ^ 2:C = N ^ 3
30 FOR X = 0 TO 65535 STEP 256
40 A% = X / C
50 B% = (X - A% * C) / S
60 C% = (X - A% * C - B% * S) / N

70 D% = X - INT (X / N) * N
80 A% = A% + 176 + 7 * (A% > 9)
90 B% = B% + 176 + 7 * (B% > 9)
100 C% = C% + 176 + 7 * (C% > 9)
110 D% = D% + 176 + 7 * (D% > 9)
120 HPN$ = "$" + CHR$ (A%) + CHR$
  (B%)

```

```

130 FHML$ = "$" + CHR$ (A%) + CHR$
  (B%) + "FF"
140 HML$ = " $" + CHR$ (A%) + CHR$
  (B%) + CHR$ (C%) + CHR$ (D
  %)
146 PRINT XX; TAB( 4)" | ";HPN$;
  " | "; TAB( 13);X; TAB( 18);
  "-";X + 255; TAB( 25);" | ";
  HML$;"-";FHML$
147 XX = XX + 1
150 NEXT

```

BRACING
continued from page 15

```

200 O = P * A * V * EXP ( - B /
  C)
210 GOTO 150
220 IF B1 < 0 GOTO 250
230 PUT = P * A * V * EXP ( - B /
  C)
240 PRINT "THE VALUE OF THE PUT
  IS:"
245 PRINT PUT
247 GOTO 260
250 PUT = R + P * A * V * EXP ( -
  B / C)
255 GOTO 240
260 PRINT "DO YOU WANT EVALUATE
  ANOTHER OPTION
  (YES OR
  NO)"
263 INPUT X$
265 IF X$ = "YES" GOTO 11
270 END

```

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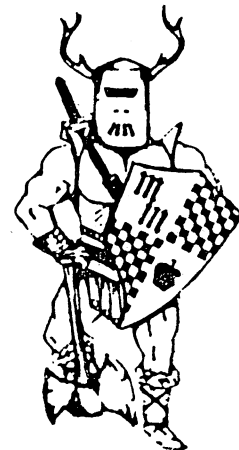


FIGURE 1

There are some general rules for developing and evaluating structure charts:

1. Each module should have a high degree of cohesion; that is, each statement in it should be related to the other statements. There are various levels of cohesion, among them functional (all the statements contribute to performing a single function), sequential cohesion (in which the outputs from one section serve as inputs to the next section), communicational cohesion (in which all the module statements work with the same data), and temporal cohesion (all the statements are related in time, such as a module containing start-up actions). The more cohesive or unified a module is, the more it stands by itself.

2. Structure charts should have low coupling or the passing of data back and forth between modules. If each module is thought of as a "black box", it is only passed what it needs to know to perform its function. Data that is accessible to a module that does not need it, is subject to being changed accidentally.

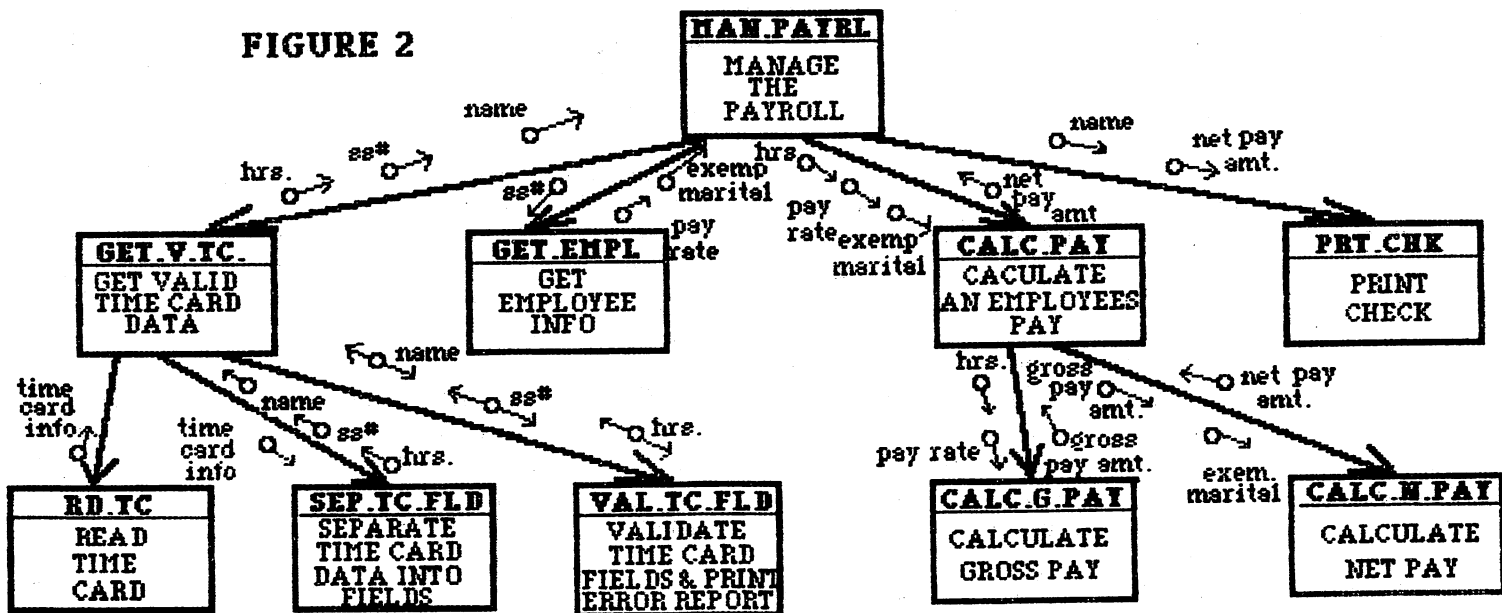
Data that is passed up several levels of a structure chart and passed down another leg is known as "tramp" data and often indicates that a better structure could have been chosen--one in which the modules that use the same data are closer together in the hierarchy.

3. Structure charts often have afferent and efferent legs. This is the processing of inputs and outputs to the system isolated to their own areas. When only one routine is responsible for getting the inputs, if the method or format of the inputs changes, only the one module needs to be changed. The same is true if one routine is responsible for formatting a report and the report format is re-defined. Besides having legs responsible for inputs and outputs, one or more legs are usually responsible for transforming data and the parent module is responsible for coordinating flow between inputs, transforms, and outputs.

4. Modules should aim to be of a reasonable size. A module that is too big may indicate that the module is trying to do too much. Each module that

continued on page 13

FIGURE 2





TIPS AND HINTS

edited by Cathy Reed

This month we have hints about disk security, files that are misnamed, but that the computer can't find, and tips on Wizardry. If you have a special way of doing things, or an easier way, let us know. We are interested in hints for everyone, but especially for beginners. If we publish yours, you'll receive a credit memo for five dollars off on your next purchase from BRAC. Send all tips or hints to BRAC Tips and Hints, 1301 N. 19th, Norfolk, NE 68701. We're waiting to hear from you!

--- ---

Rob Cooper writes that he is a new member from Saskatchewan, Canada and is extremely interested in the club. Here's his hint:

If you ever want to stop a person from listing a program you made, simply insert the following: POKE 1011,65.

Note: This POKE will stay active until the computer is shut down. If anyone knows how to shut off this poke, I would deeply appreciate knowing how to do it.

--- ---

Naida Dickson of Gardena, California writes that she has used an Apple for three years, and uses it to make word puzzles. She has this tip:

Sometimes you find something on your disk catalog that you didn't intend to save there; when you try to delete it your Apple says, "File not found!" But there it is in your catalog, refusing to budge. Alternately, you may find that you have a valuable text file, but for some reason it has a crazy title, and again your Apple says "File not found!" when you try to call it up. What's the matter?

Usually the problem is simply that in saving it you may have accidentally hit "Control", and one of the letters in the title is a Control character, though it looks exactly like the other letters. What to do? The problem can be handled; the worthless file can be deleted, or the bad title changed to a good one, with the help of a wonderfully useful program that probably came as a freebie with your Apple, a program called FID. Put it to work!

You want to delete that worthless title, but when you ask FID to do it, FID also says "File not found!" But there's another way. FID also offers a "wild card" with the use of the "=" sign. Suppose the worthless title was JUNK, but FID can't find it because one of the letters is a Control character. So when it asks for the file name to be deleted you type "J=" and FID is ready to delete every file in your catalog that begins with a "J." In case you have other "J" files you don't want deleted, panic not. FID will ask, "Do you want prompting?" and you'll answer YES!(Y). FID will show you every "J" file, one at a time, and you'll answer "N" to every one except JUNK. Of course, if the culprit Control character happens to be the J, FID won't find it, so you'll try again. You could input "=U=" and say Yes to "..prompting?" or probably you could get through the list faster by asking for "=K", a less common letter.

Now, to rename that good file with the bad title that neither your unaided Apple nor FID can find, there is a strategy that works, and the strategy again involves good old FID.

This time you use FID's "COPY FILES" option. When FID asks for a SOURCE drive and a DESTINATION drive, the answer should be the same, whether Drive 1 or

Drive 2. When FID asks for a file name you experiment with the "wild card" (=) as above. Then when it asks for a "DESTINATION" disk, you must use the "SOURCE" disk again, as destination. FID must find the file with the bad title on the DESTINATION disk. When at last it does, it will say, "File already exists." It offers several options; the one you want is TYPE IN A NEW FILE NAME FOR THE COPY. FID will make a new file with the title you supply, after which you can use the wild card again to delete the file with the bad title. And good riddance!

--- ---

These "Wizardry" suggestions are from Doug Laney and Steve Miller at the University of Illinois, at Champaign, Illinois. Here are the hints they submitted:

Concerning money, my room mate and I keep a character called BANK who stores everyone's money after each day's run. The advantage for doing this is that in case of a death, thousands of gold pieces won't be lost along with the character. We also use BANK as an insurance agency; he can pay for all resurrections. In addition, characters can take out loans from him. The only drawback is that we have to record the balance on paper.

This second trick makes BANK somewhat obsolete except for giving loans. First, create a bishop (since he is the only character that can identify). Second, bring him to the Proving Grounds and have him identify what he is carrying as item #9 (yes, I said NINE) and repeat until successful. Then ... well I don't want to spoil your fun ... just try it! We call him SAVIOR, others call him GOD.

--- ---

Here's a handy little routine for those of us that don't have the one-wire shift modification on our][+. This routine will generate lower case from within a program.

```
REM LET A=LEN(TX$)
300 FOR QQ=1 TO A:TX$(QQ)=MID$(
    TX$,QQ,1):NEXT
310 FOR QQ=1 TO A:IF ASC(TX$(QQ))
    =32 THEN PRINT " ";GOTO 330
320 PRINT CHR$(ASC(TX$(QQ))+32);
330 NEXT:RETURN
```

Randy S. Miller 11 E. Main St.
Windsor, PA. 17366

--- ---

You may encounter an IC that likes to run hot, (uncomfortably hot to the touch). If you're handy you can make a heat sink for that IC. You will need a small piece of 1" X 1" aluminum angle and some Dow or GE clear silicone seal. Shape one side of the angle to exactly fit the top of the IC. Put some slots in the other side of the angle to better dissipate heat and glue the sink to the top of the IC with the silicone seal. Clear silicone sealer is totally non conductive. Heat will cure the silicone quicker so turn on the computer to use the IC's heat to quicken the cure. Just don't let the sink touch anything but air. I wouldn't do this on cards in the slots unless you have a lot of room. It really works but if you blow up your computer due to careless habits, don't complain, you had best have an understanding of what you are dealing with. The aluminum angle should be free of all rough edges and constructed well away from your computer. The silicone seal (known as RTV) is an excellent conductor of heat when mated against things like this and can be "peeled" off if need be after curing. You can use it as a "potting" compound also. It will withstand temps well past the 300 deg. F. range. It's a good idea to write down the info that's on top of the IC before doing this so you have a record of the IC No. since you will be covering it up. Always keep one hand on your power supply box to ground yourself out, can't have any static shocks here. You don't need to remove the IC to do this operation. I am wondering what kind of response I will get from this tip. Alan L. Sweet, 20 Ridgewood Dr. Augusta, ME 04330.



MOUSE // AND MOUSEPAINT

by Jeff Billman

REPRINTED FROM THE APPLE PEEL

For all you folks that cannot afford a Macintosh but would like to have some of the capabilities of the Mac you can add the Mouse//. With the Mouse// you get the MousePaint program which is an Apple // version of the MacPaint program. MousePaint allows you to draw pictures on the Apple screen, save them to disk, and print them on a printer. I am not sure if the version of MousePaint I was using was a production version or not as some of the commands did not work as stated in the Xeroxed copy of the manual I had to work with. There should be no major problems operating the program though. MousePaint was written by Bill Budge of Raster Blaster and Pinball Construction Set fame. Even though MousePaint runs under ProDOS you can use the mouse in your own programs written under DOS 3.3.

When you boot the program you are greeted by an intro page for ProDOS v1.0.1 and then quickly taken to the first screen of the program. From this screen you can press <RETURN> to go to the mouse tutorial, press <ESCAPE> to quit, or press the mouse button to go directly to MousePaint. The mouse tutorial takes you through the basics concepts of using a mouse to select items from pull down menus, drag objects across the screen, and move the mouse around the screen.

If you have used the MacPaint program you can use the MousePaint program. There are only a few differences in the two programs with the main differences I noticed being that you cannot lasso objects and move them on the screen and there is no means to fill areas of the screen with color unless you draw something with a filled in polygon. You can work around the problem of moving objects on the screen by using the cut and paste option. The screen display is laid out like MacPaint with a menu bar

across the top of the screen for pull down menus. You have drawing tools down the left side of the screen, a line width box at the bottom of the screen, and a pattern box at the bottom of the screen.

In the tool box you have a hand used to move your paper around on the screen, the editor box used for cut and paste, a pencil for free hand drawing, a spray paint can for shading, a brush for large lines, a straight edge for drawing straight lines, the text letter for entering text into your drawing, an eraser, and several geometric shapes to use. The editor box is used to frame part of your picture for cutting and pasting. The pencil draws lines that are one pixel wide. If you start using the pencil on a white background it draws a black line and if you start drawing on a black background you draw a white line. The spray can is used to spray a pattern on your drawing you have chosen from the pattern box. The paint brush draws lines of user selectable width on your paper. To use the straight edge you select the end points for your line and the program draws a line between the two points. To use the eraser you choose the eraser icon and whenever you press the mouse button and move the eraser you erase everything under the eraser. To enter text into your picture you choose the text entry icon and pick out a font from the font pull down menu. Next you place the cursor in your document where you want to place the text and click the button. Now everything you type on the keyboard is printed on your picture in the chosen font. To use cut and paste you surround the portion of the screen you want to cut out and choose the cut or copy option from the menu and that's it. To paste an object into your drawing choose the paste option and move the hand around the screen until you get to where you want to paste. By holding down the mouse button while dragging your cut out piece around the screen you can easily place your

object anywhere you want. Also, with the editor box you can select an area to invert all the white pixels to black and all the black pixels to white. One final use of the editor box is to outline an area to flip the picture either top to bottom or left to right.

With MousePaint you can print your pictures on either an Apple DMP or Imagewriter printer in any slot. Pictures created can be saved to disk for later use. I am not sure if you could use these pictures in an Applesoft program but they are about the same size as a saved hi res screen.

The documentation for the mouse looks really good and is very complete. The documentation includes sections on setup, care, and feeding, use of MousePaint, and how to use the mouse from Applesoft and machine language. The programming section is very complete and tells the user how to write code to use the mouse. There are several example programs in the Applesoft section and there is a machine language driver program in the machine language section.

The hardware includes the mouse, the interface and cable. The interface card contains only five ICs and very few discrete components. The mouse interface contains a 6521 interface chip, a 68705 microprocessor with built in EPROM, and what appears to be a 2716 EPROM. If I remember correctly the 68705 is a version of the Motorola 6800 series of microprocessors. The interface board communicates with the Apple in two ways. First in the passive mode your software must read the mouse to get information about position and the state of the button. There is also an interrupt mode where the mouse I/F updates memory location in the screen holes constantly with current position and state of the button information.

I would have to give this product a AAA rating (I am prejudiced on this one, I guess, considering I have already built a mouse for my Apple //). With the mouse you can achieve the look and feel of the

Mac and Lisa computers. I am sure there will be a lot of software written to make use of the mouse and Lisa technology for the Apple //. The Mouse // will be available February 15 and will cost \$175. I would like to thank Libby Preble of Apple Computer for the use of the mouse for this preview.

*** **

INTRODUCTION TO STRUCTURE CHARTS continued from page 9

has sub-ordinates should preferably have 2 to 7 subordinates. This is the optimum number that human psychology has shown that a person can keep in mind at one time. More than 7 modules being called may indicate that an intermediate module level may be needed.

5. The order of modules is not implied in a structure chart. The modules on the left are not necessarily executed first or even executed every time the parent module is executed.

These are general rules for building structure charts. Once you get used to using them, you will find that seeing the relationships of data and modules to each other not only presents a clearer picture of the system but helps encourage a cleaner design. For more information see "Structured Design" by Edward Yourdon and Larry L. Constantine, Yourdon Press, 1978.

*** **

HAM RADIO SIG continued from page 17

```

235 INPUT D0
240 PRINT : PRINT "ENTER EARTH R
      ADIUS FACTOR(AVG=1.33)":
245 INPUT K0
250 GOTO 30
300 K3 = DH / D0 + D0 / K1
310 FOR N = 0 TO 20:D3 = N * D0 /
      20
320 H3 = H1 - K3 * D3 + D3 ^ 2 /
      K1
330 PRINT D3,H3
340 NEXT N
350 END

```



BRACING-THE CLEETON MODEL

by G. Warren Duff

Last month we were listening for hoof beats. Bob Farrell now says, "nineteen eighty four is starting like a year that will need patience and will be most rewarding to those who invest in conservatively valued quality stocks." What a difference a day makes!!! Due to the publication deadline, I have not heard from anybody on the timing contest--so no results to report. I anxiously await the results of your crystal ball gazing--sorry, BRACING with your Apple.

This month I have included an options pricing model suggested by Cleeton. I start with a basic discussion of options to get on the same wavelength. If someone has gone further, please let us know. We do hope to build on this first program to include the Black Scholes Model and a commodity futures model. You will note that I am a basic-BASIC programmer. I am sure there is a better way. For example, I need a way to correct input data. I just love some of the creations I see on the Disk Network. So I do need help on programming. We hope to make this program available to the BRAC library when completed.

The options auction is a market where one can purchase the right to buy one hundred shares of a stock at specified price (strike price) within a specified time period. Two types of options are available, namely puts and calls. A call gives you the right to purchase one hundred shares of stock from a seller at the striking price. On the other hand, a put gives you the privilege to sell one hundred shares of a stock at the striking price. Both puts and calls have a specified lifetime and the purchaser must pay a premium for the puts and calls. In actual practice, if one expects the stock to climb in price, a call at a striking price above the current stock price would be purchased. If the stock in fact

increases in price the call will appreciate much faster than the stock since you have the right to purchase one hundred shares of the stock. If the stock climbs above the striking price the call appreciates point for point with the stock. Since each option point is normally worth one hundred dollars, profits tend to increase rapidly. Puts work exactly the opposite.

The problem for the investor is to determine if an option is overpriced or under priced. Many methods are available with the two most popular being the Black Scholes Model and the Cleeton Model. This article will present the Cleeton Model although Black Scholes Model has been programmed. The Cleeton Model is derived by fitting equations to the average of actual quoted prices over a long period of time. Cleeton gives the following equation for the time value of the option.

$$T = PAVe - IP - SI / ZPAV$$

P=Price of the stock

S=Strike price

V=Option Volatility

A=Function of the time to expiration

$$A = (\sqrt{D} + \ln \sqrt{D} + 0.013D - 1) - 100$$

D=Number of calendar days till expiration

The actual value of an option is calculated from the following equations:

Oc=Call value

Op=Put value]

Oc=T P<S

OC=T+[P-S] P>S

Op=T+[S-P] P<S

Op=T P>S

One sticky problem remains. You must determine the option volatility in order to use the above equations. Common practice to determine the volatility is to guess at the volatility for the option whose striking price is closest to the

price of the stock. This is usually the most traded option and considered to be the fairest option price. Once this volatility is determined you then determine if the other listed options are fairly priced at that date or determine option prices at a future date with the determined volatility. From the implied volatility you can determine the highest reward to risk ratio for a particular option. One can then compare these ratios to other stocks. First things first, we must learn how to use the model.

We first get a copy of Barrons or the Wall Street Journal. I used the December fifth, the one with the Cabbage Patch dolls on the cover. You hear stories of individuals hovering at the market place with hand held calculators determining if options are fairly priced and taking advantageous positions. For those of us who have to attend to another chosen career, we could determine option prices at target stock prices at various points in time. Another strategy is to determine reward/risk ratios for a particular stock and compare various stocks to determine our most advantageous position. One word of warning, a call option is only as good as its underlying stock, i.e., the stock must rise for the option to appreciate. Check the strategy of Jerry Nix, Money Magazine, December, 1983, page 86. This article will give one persons experience with options.

I chose Boeing (Barrons, page 122) since it had a striking price nearly equal to its stock price. The Boeing february 45 call is priced at 2-5/16 with seventy three days till expiration. Boeing closed on December second at 44-3/4. I calculated the volatility to be 0.51. Checking previous week when Boeing was closed at 43-5/8, the option closed at 1-15/16. I calculated the option price to be 1.89--off about 1/16--not bad for a fitted curve. I then checked the February 50 and the May 50 which closed at 11/16 and 1-3/4 respectively. The February 50 worked out to be .823 13/16 going to the nearest

sixteenth. We find the February 50 to be slightly under priced according to our model. Also the May 50 option was slightly under priced at 1.86 as compared to the close of 1.75.

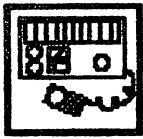
So there you have it. The Cleeton Options Pricing Model. We need people who can program and will take the time and effort to contribute to our library of software. We would like to build a moving average optimizing model. This model would try different moving averages on a series of data and determine the optimum moving average for that series. We need software experience reports from members. I'll be waiting patiently for contestants in the timing contest. Really--conservatively valued quality stocks--I liked listening for hoof beats better. Let's go BRACING. Remember, one who lives by the crystal ball must be ready to digest ground glass. I like apples better.

5 REM CLEETON OPTION PRICING MO
DEL

10 PRINT "CLEETON OPTION MODEL"
11 PRINT "OPTION (PUT OR CALL)"
12 INPUT Y\$
20 PRINT "STOCK PRICE"
30 INPUT P
40 PRINT "STRIKE PRICE"
50 INPUT S
60 PRINT "DAYS UNTIL EXPIRATION"

70 INPUT D
80 PRINT "VOLATILITY"
90 INPUT V
100 A = (D ^ .5 + LOG (D ^ .5) +
.013 * D - 1) / 100
110 B = ABS (P - S)
111 R = S - P
112 B1 = P - S
120 C = 2 * P * A * V
125 IF Y\$ = "CALL" GOTO 130
127 IF Y\$ = "PUT" GOTO 220
130 IF B1 < 0 GOTO 200
140 O = P * A * V * EXP (- B /
C) + B1
150 PRINT "THE VALUE OF THE CALL
IS:"
152 PRINT O
154 GOTO 260

continued on page 7



HAM RADIO SIG THE RADIO HORIZON

by Veon R. Dillon

Have you ever wondered if you could get an antenna high enough to copy a local repeater or that station just down the road? It requires a lot of energy to put up a new antenna just to find out it didn't work. This article, along with the computer model discussed, should take a lot of the guess work and physical labor out of the job. By running the computer model you can calculate the possibility without leaving your chair (in front of the computer, of course). There are many factors which affect the radio horizon but those that can best be calculated are height of the transmitting antenna, height of the receiving antenna and the micrometeorological conditions between the two. Let's dive into the theory and then examine the computer model.

Radio waves bend as they propagate through the atmosphere and the velocity of this propagation depends on the refractive index of the air. The refractive index is also known as the square root of the dielectric constant. The dielectric constant of air is a function of pressure, temperature and humidity. This constant (variable as I see it) decreases with altitude and I'll show why that is important in a moment.

A radio signal at a slightly higher altitude, $h + \Delta h$, travels just a little faster than the reference signal traveling at altitude h . The effect is to tilt the wave front very slightly. If a curve with a radius greater than the earth is used to draw the wave path it can be seen that the wave will intercept the earth beyond the geometric tangent point. The geometric horizon is closely approximated by:

$$d(mi) = \sqrt{1.5h}$$

where h = antenna height in feet.

If we were to measure the refractive index of the surface of the earth over a period of a year or so we would find the long term index is approximately 1.0003. This decreases with altitude at an average of 12 parts per million per 1000 feet. The refractive index is normally expressed in N units. N unit is defined as $(1 - \text{refractive index}) \times 10$ raised to the sixth power. The surface refractive index is 300N units and the gradient is -12N units per 1000 feet.

The effective earth radius factor K determines the distance to the radio horizon and is related to the refractive index gradient by the expression:

$$K = 1 / ((1 + a(\Delta N / \Delta h)))$$

a = true earth radius

$\Delta N / \Delta h$ = the refractive gradient in feet

The distance to the radio horizon in miles can now be computed as:

$$d(mi) = \sqrt{1.5Kh}$$

h = antenna height in feet

Because it is next to impossible for most of us to measure the micrometeorology of a propagation path it becomes necessary to use an average K value. The generally accepted value is:
 $K = 4/3$

$$\text{This results in: } d(mi) = \sqrt{2h}$$

This concludes the theory and now we'll take a look at the operation of the computer model. The model allows us to specify a value of K which is used to calculate signal path above smooth surface as a function of distance between two antennas. Different meteorological conditions can be substituted by using different values of K . The computer program calls for the altitude of the

antennas, H1 and H2, in feet above mean sea level, the separation distance, D0, in miles and the earth radius factor K0. Remember to calculate antenna heights above sea level not above local terrain because we've seen that this can make a big difference in the K factor. The output of the program is a listing of the distance in miles from the antenna at H1 and the height of the signal path in feet above mean sea level. If the antenna heights are too low the signal will be blocked by the curvature of the earth and the computer will print "LOS Not Possible". The computer will then print negative altitudes where the signal path falls below the surface of the earth above mean sea level. This information can be used to estimate the increase in antenna height required for an LOS path.

The radio signal path height is calculated at 20 evenly spaced points along the propagation path. By changing the number 20 in program lines 100 and 310 the number of points and printout lines can be changed.

If there are hills or other major obstructions between your antenna and an antenna you desire to communicate with; compare the height and distance of the obstruction to the values on the printout to determine if your signals are clearing the object. A topographical map of your location will be very helpful in determining the height of the surrounding terrain.

Lines 205 - 245 is the data input section of the program. If antenna heights are sufficient for LOS communications the lines 300 - 340 compute height of signal path. If the heights of the antennas are not sufficient for LOS communications then lines 90 - 130 print the negative heights. Lines 30 - 60 determine height of signal path and then passes program control to one of the two subroutines above.

The theory may be a bit hard to understand but the principle of beyond the horizon communications is well known.

This program gives a pretty good representation of what is really happening to a transmitted signal. We use a similar program to calculate RF energy paths on our research ship and I've found the numbers computed by this program come very close to those computed by a "very expensive" production computer and program. Good luck and good LOS. Veon R Dillon WH6AKZ, 4443 Olympic Drive, Cocoa, FL 32927.

```

1  REM *****
2  REM **VHF/UHF PROPAGATION**
3  REM **COMPUTER MODEL FOR **
4  REM ** CALCULATING RADIO **
5  REM **     HORIZON     **
6  REM *****
10 HOME : VTAB 6: HTAB 11: PRINT
    "VHF/UHF PROPAGATION": HTAB
    11: PRINT "COMPUTER MODEL FO
    R": HTAB 8: PRINT "CALCULATI
    NG RADIO HORIZON": HTAB 11: PRINT
    "AND FEASIBILITY OF": HTAB 1
    1: PRINT "LOS COMMUNICATION
15 VTAB 20: HTAB 8: PRINT "HIT A
    NY KEY TO CONTINUE";: GET A$

20 GOTO 205
30 DH = H1 - H2
40 K1 = 1.5 * K0
50 K2 = (D0 ^ 2) / K1
60 IF ABS (DH) > K2 THEN 300
70 D1 = 0.75 * K0 * DH / D0 + D0 /
    2
80 H0 = H1 - D1 ^ 2 / K1
90 IF H0 < 0 THEN PRINT "LOS NO
    T POSSIBLE"
100 FOR N = 0 TO 20:D3 = N * D0 /
    20
110 H3 = H0 + (D3 - D1) ^ 2 / K1
120 PRINT D3,H3
130 NEXT N
140 END
200 REM ** DATA ENTRY **
205 HOME
210 VTAB 4: PRINT "ENTER YOUR QT
    H ANTENNA HEIGHT IN FEET ABO
    VE MEAN SEA LEVEL"
215 INPUT H1
220 PRINT : PRINT "ENTER THE HEI
    GHT IN FEET ABOVE MEAN SEA L
    EVEL OF THE ANTENNA YOU DESI
    RE TO COMMUNICATE WITH"
225 INPUT H2
230 PRINT : PRINT "ENTER DISTANC
    E BETWEEN THE TWO IN MILES"

```


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SOFTWARE LIBRARY NEWS

by John Wrenholt

If you like Eamon adventures, have we got a treat for you. Over the past month, we have received several new adventures. You will need the Master Eamon disk (E01) to use them. They are:

Disk # and Name	Author
E43 Priests of Xim	Marty Bauman
E44 Escape from Orc Lair	Jay Hinkelman
E45 Swordquest	Roger Pender
E46 Life Quest	David Crawford
E47 Futurequest	Roger Pender
E48 Picnic in Paradise	John Nelson
E49 Castles Casinos	
E50 Behind Sealed Door	Tim Berge
E51 Eamon Bluff	
E52 Devils Doom	
E53 Feast of Carroll	D. Lilienkamp
E54 Crystal Mountain	Ken Hoffman
E55 Master's Dungeon	Jeff Seeck
E56 The Lost Adventure	Jeff Seeck
E57 Manxome Foe	Ray Olszewski
E58 Land of Death	Tim Berge
E59 Jungles of Vietnam	Jeff Seeck
E60A Sewers of Chicago	Jeff Seeck
E61A Blk Castle Of Nagog	Doug Burrows
E62A Caverns of Doom	Matthew Mullin
E63 Valkenburg Castle	Jeff Weener
E64 Modern Problems	Bonnie Anderson

That should be enough to keep you busy all summer long. We also received updated versions of the Eamon Utilities Disks. These utilities have been totally redone. All are menu driven and categorized by general function. EU1 is for everyday adventuring, EU2 is for designers, EU3 contains monster battles, and EU4 is for creating unbeatable characters. Also, the utilities have been documented in the form of information in a text file on the disk. Thanks to John Nelson of Des Moines, Iowa for his efforts in improving these disks.

Because the new Eamon adventures overlap with the Eamon Tournament disks (E60-E62), we have decided to give them a

new volume number. Castle of Count Fuey will now be disk volume ET1, Search for the Key will be ET2 and Rescue Mission will be ET3. Since it will be some time before we can get all the members converted over to these new numbers, it would be a good idea to specify the name of the adventure when placing your order.

Here's a quick run down on the new disks which have been added to the library since the last edition of the catalog was printed. Six new "personal domain" volumes have been added. Personal domain means that you can get a copy of the program to try it out and see if you find it useful. If you want to keep using the program, then you are supposed to pay the program author an additional fee. I have enclosed this fee in parentheses so you can see if it is in your price range. Disk Volume K01 (\$30) is a program called Diversi-DOS which will greatly speed up disk operations. K02 is One Key DOS (\$9) which modifies normal Apple DOS so that most commands can be executed by typing only one or two keys. K03 is Disk Manager (\$29), which is a set of useful DOS utilities which include disk to disk copying, improved FID, and a disk zap. K04 is called Class Records (\$30) and is designed for teachers to use to keep track of grades and other classroom records. K05 is Master Chart (\$17.95) which can be used to create hi-res bar and pie charts. Mad Poet (14.95) is K06 and creates poems and hi-res patterns.

H09 and H10 are the HRPL graphics system. H09 has a modular graphics system, a font writer and editor, a shape table displayer, and information about HRPL. H10 consists of several hi-res pictures.

F01 and F02 are a two volume set with the FIG Forth editor and interpreter. There is no documentation for these disks

continued on page 4

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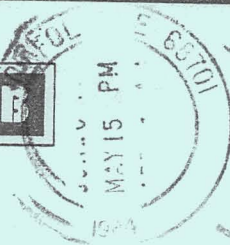
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